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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,781	02/27/2004	Sheldon Shafer	GEPL.P-093	9454

43247 7590 07/23/2004

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EXAMINER	
BOYKIN, TERRESSA M	
ART UNIT	**PAPER NUMBER**
1711	

DATE MAILED: 07/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/789,781	SHAFER ET AL.	
	Examiner	Art Unit	
	Terressa M. Boykin	1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2004* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

35 USC 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over USP 6518391, see abstract, examples, as well as the excerpt below.

The reference discloses a polycarbonate liquid crystal prepared from the same components as claimed by applicants except for the use of the polycarbonate as a molded article prepared therefrom. Note the reference's description of the polycarbonate:

"In one aspect of the present invention a low molecular weight precursor polycarbonate comprising endgroups having structure I is extruded and pelletized prior to solid state polymerization. Where the precursor polycarbonate has a low molecular weight the bead or strand emerging from the extruder is not sufficiently strong and pliable to be stranded to a conventional pelletizer. An alternate means of pelletizing low molecular weight polycarbonates has been discovered and is shown in the FIGURE. The low molecular weight precursor polycarbonate is introduced into an extruder 10 through feed inlet 20 and emerges from the extruder as a molten bead or strand 30 which contacts a motorized conveyor 40. A coolant sprayer 50 partially cools the strand by spraying it with a coolant 55. The temperature of the strand is controlled in this manner such that the strand remains ductile. The ductile strand is conveyed to a pelletizer 60 having a rotating cutter blade 65 which chops the cooled strand into pellets 70. Maintaining the strand at a temperature at which the strand remains ductile prevents shattering of the polycarbonate in the pelletizer and allows the formation of pellets."

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the polycarbonate of the reference for making a molded article since the polycarbonate composition according to the method made as noted in Examples and the resulting characteristics of the polycarbonate as note in Table 5 of the reference appears to be compatible with those used to make a molded article.

Note also that the use of polycarbonates for molded articles in well known in the art.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-48 are rejected under 35 U.S.C. 102(b) as being anticipated by

Applicants' claims are directed to a method for forming a liquid crystal polycarbonate comprising the steps of forming a reaction mixture comprising (a) an activated diaryl carbonate; (b) at least two species of aromatic diol monomers as claimed and processing the reaction mixture in a melt transesterification reaction to form a liquid crystal polycarbonate.

The reference USP 6518391 teaches solid state polymerization of partially crystalline polycarbonate oligomers bearing ester-substituted terminal groups occurs at useful reaction rates despite their high level of endcapping. Partially crystalline polycarbonate oligomers having ester substituted terminal groups may be obtained in a single step by reaction of an ester substituted diaryl carbonate such as bis-methyl salicyl carbonate with a dihydroxy aromatic compound such as bisphenol A in the presence of a

transesterification catalyst such as sodium hydroxide. Alternatively, amorphous oligomeric polycarbonates incorporating ester substituted endgroups may be obtained through careful control of the melt reaction conditions. The amorphous oligomeric polycarbonates are crystallized upon exposure to solvent vapor and subsequently undergo solid state polymerization at synthetically useful reaction rates.

With regard to applicants "activated diaryl carbonate", applicants disclose in the specification on page 4 that the term "activated diaryl carbonate" is defined as a diaryl carbonate that is more reactive than diphenylcarbonate toward transesterification reactions. Applicants give as non-limiting examples of activated carbonates those which include bis(methylsalicyl)carbonate or BMSC. The reference discloses in cols 4, 5 and 9 the use of bis(methylsalicyl)carbonate. With regard to applicants' "at least two species of aromatic diol monomers, note that the reference discloses in cols. 7-8 through col. 9 line 9 the use of the same dihydroxy components as claimed which may include the combinations thereof. Note also, with regard to applicants claimed melt transesterification method that

In one embodiment of the reference the transesterification catalyst is tetrabutyl phosphonium acetate. In an alternate embodiment of the present invention the transesterification catalyst comprises a mixture of an alkali metal salt or alkaline earth metal salt with at least one quaternary ammonium compound, or at least one quaternary phosphonium compound, or a mixture thereof, for example a mixture of sodium hydroxide and tetrabutyl phosphonium acetate.

With regard to applicants' claim 7 regard the 80 mole % of diol monomers, note tables 1 and 2 with regard to the BMSC/BPA ratios.

With regard to dependent claims 5, 6, 12, and 13 note that the reference states that in one embodiment of the present invention the transesterification catalyst is tetrabutyl phosphonium acetate. In an alternate embodiment of the present invention the transesterification catalyst comprises a mixture of an alkali metal salt or alkaline earth metal salt with at least one quaternary ammonium compound, or at least one quaternary phosphonium compound, or a mixture thereof, for example a mixture of sodium hydroxide and tetrabutyl phosphonium acetate. Note also in col. 10 lines 54 through col. 11 that the transesterification catalyst include quaternary ammonium compounds comprising structure V as disclosed. See also col. 10 lines 43-52.

With regard to independent claims 15, and 31, note cols. 8 and 9.

Thus the reference discloses a liquid crystal polycarbonate or a partially crystalline oligomeric polycarbonate having enhanced crystallinity under solid-state polymerization conditions prepared from the same components as claimed by applicants. When comparing the example of the reference to that of applicants example in the specification, it is noted that the steps are parallel with regard to both the formation of the oligomer as well as the molecular weight build up of the crystallized oligomer. Thus in

view of the above, There appears to be no significant difference between the reference and that which is claimed by applicant(s). Any differences not specifically

mentioned appear to be conventional. Consequently, the claimed invention cannot be deemed as novel and accordingly is unpatentable.

Correspondence

Please note that the cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site (www.uspto.gov), from the Office of Public Records and from commercial sources. Applicants may be referred to the Electronic Business Center (EBC) at http://www.uspto.gov/ebc/index.html or 1-866-217-9197.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Terressa Boykin whose telephone number is 571 272-1069. The examiner can normally be reached on Monday through Friday from 6:30am to 3:00pm.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. The general information number for listings of personnel is **(571-272-1700).**

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tmb

Examiner Terressa Boykin
Primary Examiner
Art Unit 1711